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ABSTRACT

This report summarizes in-home behavioral interventions carried out with 18 individuals (ages 3 to 43) with developmental disabilities in the San Diego and North Los Angeles County Regional Centers during 1990-1991. The report focuses on client characteristics, problems that were addressed, intervention procedures used, and results. The paper describes a system of data collection and feedback developed to continuously assess clients' progress, to identify treatment and parent training problem areas, to build parents' confidence in their use of behavioral procedures and their ability to manage their child's behavior, and to serve as an integral part of a specific treatment procedure. The most frequent types of problems addressed were general noncompliance with parental requests and noncompliance with specific types of requests. Other problems included physical aggression, property destruction, and self-injurious behavior. Interventions used frequently included instruction in the use of prompts, differential reinforcement of behaviors other than the targeted behavior, activity programs, redirection, skills training, and incentives/tokens. Results indicated that all but one of the 53 targeted behaviors in the 18 clients were reduced below the initially reported rate of the behavior. Nine recommendations are offered for improving in-home interventions. (JDD)

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INCREASING THE EFFECTIVENESS OF IN-HOME BEHAVIOR INTERVENTION

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With the long national trend toward normalization, deinstitutionalization, and maintaining developmentally disabled persons in the most naturalistic settings possible, there has been increasing emphasis on in-home behavioral interventions to remediate behavior problems and thus allow for developmentally disabled children to remain with their families. Behavior problems of developmentally disabled people have long been recognized as one of the most significant factors leading to out-of-home placement and failure of placements in naturalistic settings. Successful interventions not only reduce targeted behaviors, they also increase parents' competence and confidence in managing their children's challenging behaviors and they help keep families together. Especially for disorders of conduct, research has shown that behavior therapy approaches, particularly parent training, are the treatment of choice (Wells, 1981).

Service guidelines prepared by Southern California Regional Centers in 1982 (Young et al., 1982) stated that in-home behavior intervention "is an effective form of intervention if the objectives are accomplished within a short period of time. Families benefit from this form of intervention because they get to see and practice the techniques...one risk is that families may become more passive and dependent on the vendor with the effect that long intervention periods are necessary."

This report summarizes the eighteen in-home behavioral interventions carried out by the author while working as a behavioral vendor for the San Diego and North Los Angeles County Regional Centers during 1990-1991. An additional perspective on in-home interventions has been gained by means of the author's current role as a behavioral consultant for the South Central Los Angeles Regional Center. This role entails providing services for the Regional Center's clients in small and medium-sized residential facilities (i.e. out-of-home) and monitoring vendors providing behavioral intervention services. Accordingly, concluding comments about how to improve these interventions are made with the dual perspectives of a behavioral vendor and as a Regional Center employee monitoring and evaluating vendors.

In summarizing eighteen in-home interventions, it is the intention of this paper to provide a flavor of a) what these clients were like, b) what problems were addressed, c) briefly, what sorts of intervention procedures were used, and d) what kinds of results were obtained.

Presented at the 116th Annual Meeting of the American Association on Mental Retardation, New Orleans, May 1992.

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However, it is not news that behavior therapy works to reduce behavior problems of developmentally disabled (and other) people. Plenty is known about the technology. The critical issues in effective treatment are now treatment compliance and the link between the implementation of procedures and the desired outcome. The main emphasis of this paper will be on the use of a system of data collection and feedback to a) continuously assess clients' progress, b) to identify treatment and parent training problem areas, c) to help build parents' confidence in their use of behavioral procedures and their ability to manage their child's behavior, and d) occasionally as an integral part of a specific treatment procedure.

Client Characteristics

Insert Table 1 about here

Client characteristics are listed in Table 1. Note that only 3 of the 18 clients were profoundly or severely mentally retarded. Accordingly, many of the interventions were used for this relatively high-functioning group of clients and may not be appropriate for lower-functioning persons. Note also that only three were over 20 years of age.

Types of Problems

During the assessment phase of each intervention, several target behaviors were identified with parents. A limited number of the most significant problems were initially targeted for intervention, and parents were trained to keep data on those behaviors. The number of targeted behaviors ranged from 2 to 5. For purposes of data analysis, the 3 most significant behaviors for which data were kept for each client were identified as "targeted behaviors" and are so labeled on Figure 1.

Insert Figure 1 about here

The "non-targeted" behaviors in the figure include both initially assessed problems which were either not directly treated because they were not seen as highly significant, or were treated without formal data collection and monitoring, or were raised as significant problems only after the intervention began.

As can be seen in Figure 1, general non-compliance to parental requests and non-compliance to specific types of requests were the most frequent types of problems addressed. The more severe problems of physical aggression, property destructive behavior, and self-injurious behavior were also frequent intervention targets. Verbally abusive behavior, targeted for three clients, included loud yelling, swearing at others, making

threats, and engaging in heated arguments. Disruptive behavior on trips, an initially targeted behavior for only two clients but addressed as a problem sometime during the intervention for seven other clients, included refusals to leave stores or other public places or tantrums and other inappropriate behavior in those settings; some parents were afraid to take their children out of the house for fear that they would create a situation they could not control, injure someone, or embarrass them.

Fears which were treated but were non-targeted behaviors for five clients, included agoraphobia, fears of vacuum cleaners, mechanical hand dryers, and voices on TV and radio. Skill deficits, non-targeted behaviors for five clients, included lack of toileting skills, communication deficits, and various deficits in social skills.

Results

All but one of the 53 targeted behaviors were reduced below the initially reported rate of the behavior (and that one ended up below the rate determined from the initial behavioral data). All but 5 of the 53 behaviors were reduced by more than 50% from the baseline rates. Additionally, of the 39 non-targeted behaviors, 24 were clearly reduced according to parents' reports and judging by observations in the home, although behavioral data were not available for most of these.

Interventions were funded by Regional Centers for three months or less. One of the problems with many in-home interventions is that they go well beyond the intended short-term therapy time frames which are intended. The results reported here are only for those short contracted interventions. However, four of the eighteen were funded and continued beyond the initial three months. Of these, one was extended just two sessions because of the client's strong request to continue. Behaviors were well under control, and the intervention was then easily terminated. One extended for a second three months at the parent's request primarily to increase the parent's confidence in managing her child's behavior, although the rates of the targeted problems were already low; some additional behaviors of less significance were then targeted and reduced.

Two interventions extended past an additional three-month period. In both cases, problems in the home were significantly reduced but occasionally occurred with sufficient intensity to warrant continued treatment. In both cases, parents' confidence in their ability to manage their children's behavior was low after the initial three-month intervention. Further significant reductions in problem behaviors and an increase in parents' ratings of overall behavior were achieved prior to termination.

Insert Table 2 about here

As seen in Table 2, the reported interventions averaged about 8 sessions over a period of about 10 weeks. Three of the five clients on psychotropic medications had the medication reduced during the intervention; the other two had no change. Parents were asked to rate their child's behavior each week on a five-point scale (very poor to very good). Ratings over the last three sessions averaged 4.5 (between "good" and "very good"). Initial ratings were not obtained but can reasonably be assumed to be low; virtually all parents' initial verbal reports of their child's behavior used adjectives such as "terrible" or phrases such as "out of control."

Rates of targeted behaviors were determined by using data recorded on a daily basis on Behavior Record Forms (see Figure 3). Each day was divided into three or four periods of time, and the occurrence and non-occurrence of targeted behaviors was recorded for each period. Rates for determined by dividing the number of periods in which the behavior occurred by the total number of periods. As Estimated Baseline was based on parents' verbal reports during the assessment interview. Baseline 2 was determined by data kept by parents between the initial assessment and the first formal treatment session; this period ranged between one week and six weeks, depending on how quickly the intervention was approved by the Regional Center. Final Treatment Rates were determined from the data kept and reported over the final three treatment sessions for each client.

As seen in Table 2, the overall mean rates of targeted behaviors decreased from 55% during the Estimated Baseline to 35% during the period between the assessment and the first formal treatment session (Baseline 2) to the 6% Final Treatment Rate. All these changes in behavior are highly statistically significant. The reductions in behavior from the Estimated Baseline to Baseline 2 could have resulted in part from the differences between parents' recollection and estimates of their children's behaviors and more accurate rates determined by daily recording. Note also, though, that initial treatment recommendations were always made during the assessment interviews, so that the reductions in rates before the first formal treatment sessions could also be due to the parents' implementation of procedures recommended during that interview.

In addition to these reductions in behavior rates, it should be noted that as rates decreased there were almost always reductions in intensity of the behavior. For example, when Subject 4's rate of self-injurious behavior went from 100% of daily periods to 50%, the intensity of the head slaps decreased, the length of time she engaged in head-slapping at any time decreased, the number of episodes within a time period decreased, and it became much easier to redirect her away from head-slapping.

Other types of outcomes included improvement in school behavior (sometimes as a result of direct intervention and sometimes not); one child moved from her single mother's home to

her grandmother's home with immediate improvement in her behavior and to the satisfaction of all parties; less fearful behavior and decreased rating of anxiety; increased trips into the community as behavior problems subsided and parents felt more confident in taking their children into public settings; and occasionally improved relationships among other members of the family were reported. One two-session intervention was clearly a failure: even though the targeted behavior problems were significantly reduced (and in fact were never observed by the therapist), the child was placed into a licensed residential facility.

Method

Many different types of interventions were used both singly and in combination to address the various behavior problems. For the most part these are widely used behavioral procedures. The purpose of this paper is not to indicate what procedures work with which problems. However, it may be helpful to note the breadth of the procedures used to effectively address the wide variety of problems of this population of eighteen clients. A few of these interventions will be briefly elaborated.

Insert Figure 2 about here

The number of clients with whom various treatment procedures was used can be seen in Figure 2. Instruction in the use of prompts or instructions was part of the parent training in every intervention, in part because non-compliance played a part in all clients' behavior problems. Written procedures for giving instructions and limit-setting included specific procedures for getting the child's attention before giving the instruction, how to give the instruction, and how to follow through both when the instruction was followed and when it was not followed. An addendum which was sometimes necessary to help determine what are reasonable instructions and to help reduce inconsistent responses by parents to various behaviors. These "OK/Not OK lists" identified which behaviors were allowed and which were not; responses such as praise and other reinforcement for "OK behaviors" and ignoring, setting limits, and redirecting for "Not OK behaviors" were then trained for consistent use.

Differential reinforcement of behaviors other than the targeted behavior (DRO) was the second most frequently used procedure. Activity programming included scheduling of preferred activities and those activities which were determined to be associated with low rates of problem behaviors Scheduled activity programming was used particularly for periods of time which had been identified as having high rates of problem behavior. Skills training focused on teaching communication skills, various social skills, and toileting.

Insert Figure 3 about here

For some verbal clients, incentive procedures with and without weekly contingency contracts were occasionally used. The Behavior Record Form seen in Figure 3 was used to establish weekly rates of targeted behaviors. Then weekly criteria for these behaviors a weekly incentive were agreed upon with the client. When the criteria were met or bettered, the incentive was delivered. Criteria for the following week were then made more difficult when the criteria were met or remained the same or were made less difficult when the criteria for the week were not met.

For very low-functioning clients, important aspects of treatment were identification of effective reinforcers and use of a problem-solving technique immediately when the child began to express frustration or anxiety or gave other signs of being upset. A list of probable frustrations was made up for each of these children; these often included things like being bored, being hungry, being wet, needing attention, and sibling or other person bothering them. Parents were trained to run through this list and to address any identified problem in a supportive way.

In addition to those procedures listed in Figure 2, intervention procedures included role play with the child (also used as an instructional technique with parents to train use of various procedure), weight control procedures, overcorrection, use of a communication book between home and school, self-monitoring procedures, systematic desensitization, response cost, graduated guidance, environmental changes, and the cognitive-behavioral procedure called thought-stopping.

Treatment Model

This author previously presented a paper (Williams, 1989) summarizing the use of a similar but more detailed system over a 14-month period in a large residential developmental center. The system of data collection and feedback to residential staff and managers was used to motivate staff and administrators to improve program implementation and to help determine when behavior interventions and psychotropic medications should be changed. It resulted in very significant reductions of targeted behavior problems and in psychotropic medication usage. Furthermore, it was demonstrated that the better the implementation of the program procedures by direct care staff, the more the reduction in the behavior problems. This linkage between behavioral interventions on paper to a measurement of actual implementation of the procedures and then to behavioral outcomes is rarely studied but of critical importance.

The behavior intervention system used in the in-home interventions reported here can be summarized in a series of steps:

1. Behavior intervention begins with an assessment which is carried out in the home and usually also at the school or day program. This includes a functional analysis of what is now maintaining the behavior problems which leads to treatment procedures aimed primarily at changing the events which precede and follow the behavior problems. The use of effective approaches in one setting for use in the other is explored, and procedures which are already used with good effect are encouraged for use in both settings.

2. Use of the Behavior Record Form is trained (see Figure 3).

3. Treatment directions and options are discussed. Parents contribute to selection of treatment procedures by discussing what they can and prefer to do. Treatment options are honestly discussed in terms of rationale and predicted effectiveness. After the initial assessment meeting, then, parents are left with some initial recommendations for treatment and a data form which they are asked to begin using.

4. A written Treatment Plan is mailed or is presented at the initial intervention session. A written plan is helpful in order to focus parents on specific training objectives. The plan is amended or added to as needed during later intervention sessions. Initially, treatment sessions are held once per week in the home.

5. Training to implement the Treatment Plan's procedures is carried out. Feedback is given each week to parents both on progress of their child, using data summaries and review of their own weekly ratings, and on their own implementation of procedures. Each session's training goals are set according to assessed weaknesses in implementation of behavioral procedures. Figure 4 shows three graphs of clients' behaviors. Although these are graphs of changes in behaviors from the beginning to the conclusion of interventions (i.e. a "final report"), periodically through the intervention progress to date is graphed like this for feedback to parents. Often this sort of feedback serve to build parents' confidence as they see that over a period of weeks their child has improved, judging by data they themselves have kept.

Insert Figure 4 about here

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6. Graphed data serve to help focus on areas of continuing difficulty. Occasionally (N = 4) when good progress was not made at first, a limited use of documentation sheets was made monitor the use of treatment procedures and to look more closely at cause-and-effect in the intervention. Ineffective

interventions can be due to a) poor program, b) inadequate training, or c) poor implementation of trained procedures. The goal here is to identify which of these problems exist when there is poor progress. It also helps to overcome some parents' resistance to "being told what to do" by offering clear rationales for procedures to help motivate the parents to carry out program procedures. Daily program sheets also help to remind the parent to carry out particular procedures. If implementation is not the problem, then program procedures must be changed.

7. Behavioral objectives are sometimes revised as new information is provided during the intervention. For example, Client 4's masturbating in public areas of the house were not initially identified as a problem, but during the first intervention session it was, and it was added as a target behavior and treatment procedures were taught to address the behavior.

8. The last step in the intervention is to plan for maintenance. This involves several steps:

a) fading out the therapist by scheduling sessions at longer than one-week intervals and by being increasingly less directive during sessions

b) teaching parents to anticipate and predict changes in schedule and upcoming stressful events or other factors which may affect their child's behavior and then to plan accordingly

c) teaching them to analyze their children's behavior and its motivation, using behavioral principles, and then determining what procedures to use

d) teaching them to keep data to determine if problem is stable enough to use particular interventions,and to analyze the effectiveness of their own interventions

A general rule of thumb is given to use these problem-solving techniques for three weeks and then to call the case manager if the behavior remains a substantial problem and outside help is needed; the case manager and other Regional Center staff should then decide with the parent whether additional behavioral intervention is required.

Recommendations for Improving In-Home Interventions

In-home behavioral interventions are often not successful in terms of reduction of the presenting problems or in terms of parental satisfaction. Interventions fail to achieve their goals for a variety of reasons. Based on these reported successful interventions and on unsystematic observations of the methods and results of in-home interventions made as a behavior consultant for one regional center, the following recommendations and critique of in-home interventions are made. These observations of frequent problems with interventions imply user guidelines for

consumers of these services (parents and their developmentally disabled children) and authorizing, paying agencies (Regional Centers).

1. Written procedures should be shared with the parents. Failure to do so often results in interventions which are too informal and too unfocused.

2. Target behaviors should be continuously measured and compared to baseline and previous weeks' rates. Unfortunately, measurement consists of the therapist's impressions ("improved," "substantially improved," etc.). Often care providers report little or no change in their child's behavior following behavioral interventions, and these reports do not resemble the written report of improved behavior from the behavioral vendor. Therapists must work with and assess progress with parents as a team.

3. To help arrive at consensual analysis of the intervention, parental ratings should be used. One goal for intervention should be an improved perception of the child's behavior by the parent. In the reported interventions, Client 16's problems were almost non-existent after the three-month intervention, but the mother still expressed lack of confidence in handling the problems, so the intervention was extended. She eventually increased her confidence and the intervention was terminated.

4. To facilitate a good working relationship between the parent and the therapist, the therapist's credibility can be achieved or enhanced by either a) using the parent's own data to show success, and/or b) by interacting with the child to demonstrate what to do and how to achieve success. Too often a bad relationship between the therapist and parent develops because the parent feels either something is being forced on him/her or that the situation is hopeless. In these cases, success has to be demonstrated either by hands-on work with the child on and/or by skillfully choosing the target behavior and procedure to begin with to get quick success.

5. A wide range of procedures should be available for use to create an effective, individualized program. Procedures should be changed during the course of the intervention as a result of ongoing analysis of effectiveness of those procedures which are well implemented. Too often "canned" programs are used. In these interventions some were used, too--for example, procedures on giving instructions and incentive programs--but they were individualized and changed as needed. The range of problems encountered and the limitations sometimes imposed by what parents are comfortable with and by environmental factors often require creative solutions. There is often too much reliance on simple differential reinforcement procedures and on the initially planned procedure in general. If something is not working, problem solving should occur to see if the procedures are being carried out; if so, procedures should be changed, and if not,

parents must be retrained and in some cases remotivated to follow through.

6. What behaviors are problematic and which are not should be continually assessed throughout the intervention. Stable target behaviors are needed to focus the intervention, but more information may come out in the midst of the intervention which indicate other, possibly more significant problems which must then be addressed. Failure to do so may result in reduced rates of initially targeted behaviors without improving the parent's perception that the child's overall behavior is improved.

9. Finally, there is a problem in the regional centers' behavior intervention system with continuation of interventions past the originally projected time frame. Extensions may legitimately occur for many reasons (e.g. family factors such as death of a family member, change of jobs or family routine), but progress must be demonstrated to merit continuation. Often interventions are continued even when no progress has been made in training parents to independently manage the child's behavior. The child's behavior change must be assessed with reference to adequate measurement, as discussed above, and how well the parents implement the program procedures must be assessed. A decision must then be made together by the therapist and Regional Center personnel as to whether there is sufficient indication of overall success in terms of parent effectiveness to merit continuing an intervention.

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1. Wells, K. (1981) Assessment of children in outpatient settings. In M. Hersen & A. Bellack (Eds.), Behavioral Assessment: A Practical Handbook. New York: Pergammon Press.

2. Williams, B. (1989) Tactics for behavior Management: A system to maximize benefit with minimum resources. Presented at 113th Annual Meeting of the American Association of Mental Retardation, Chicago, May 1989.

3. Young, S., et al. (1982) Guidelines for utilization of behavioral services (prepared by the Southern California Regional Centers Task Force on Behavioral Services).

Table 1

Client Profile: In-Home Behavioral Intervention

Total clients served: 18

Sex: 11 male; 7 female

Age: Average--14.8 years
Range--3 to 43 years

Ages 3 to 10--11
Ages 14 to 20--4
Ages 36 to 43--3

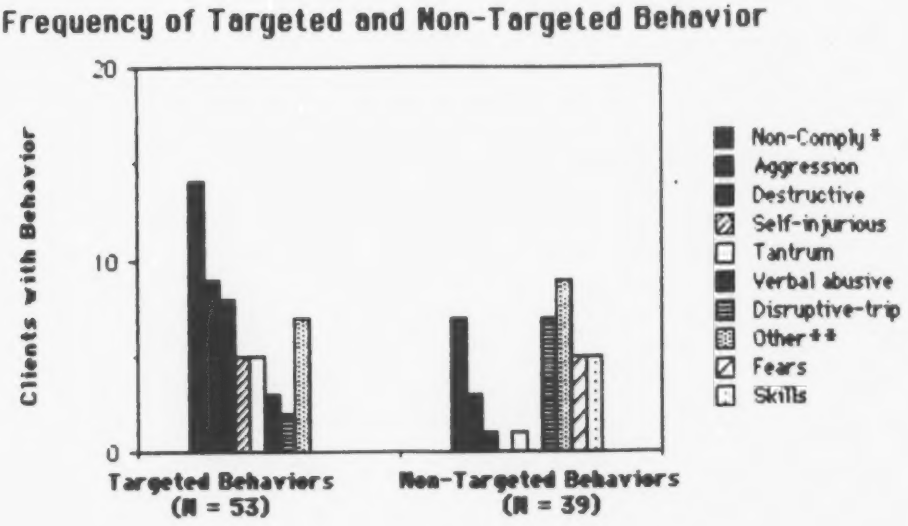
Levels of Mental Retardation: Profound--2
Severe--1
Moderate--6
Mild--7
Not Retarded--2

Other Diagnoses:

- Total with Psychiatric (Axis I DSM-3R) Diagnosis--7
- Autism--5
- Attention Deficit Hyperactivity Disorder--3
- Schizophrenia--1
- Physical Impairments--2 blind, 3 deaf
- Non-verbal--6

Number of clients on psychotropic medication: 5

Figure 1



* Non-compliance usually meant failure to follow general instructions, but in some cases it was more narrowly defined as failure to cooperate with specific requested activities such as going to bed, eating dinner, and attending a day program.

** Other targeted behavior problems include stealing food, smearing feces, removal of clothing in public areas, elopement, psychotic behaviors, inappropriate crying, and bed wetting. In addition to these, problems which were not initially targeted but were often improved include lying, various skill deficits, rated anxiety, masturbation in public areas, excessive weight gain, and perseverative behaviors.

Table 2

Results Summary

I. Length of Treatment: Average--9.8 weeks
Range--2 to 15 weeks

II. Number of Treatment Sessions: Average--8.4 sessions
Range 2 to 12 sessions

III. Number of clients extended for additional behavioral intervention: 4 (see text for explanation)

IV. Psychotropic medication (5 clients initially on medication):
3 reduced amount; 2 no change; 0 increased amount

V. Change in Parental Ratings of Behavior (17 clients rated):
(Scale: 1=very poor; 2=poor; 3=fair; 4=good; 5=very good)
Initial ratings were assumed to be 1 or 2 in all cases.
Final Average Ratings over last 3 treatment sessions: 4.49

VI. Rates of Behavior, measured as percentages of daily periods (see text for explanation) (data measured for 3 behaviors for each of 17 clients):

1. Estimated Baseline: based on verbal reports during initial assessment interviews:

   Average rate--54.8% of daily periods
   Standard Deviation--32.0

2. Baseline 2: from data kept from initial assessment to first formal treatment session:

   Average rate: 35.3%
   Standard Deviation: 30.5

3. Final Treatment Rates: from data kept and reported in last 3 treatment sessions:

   Average rate: 6.44%
   Standard Deviation: 10.29

VII. Change in Rates of Behavior (t test for matched scores):

1. Estimated Baseline to Final Treatment: $t(49) = 10.98, p<.001$
2. Baseline 2 to Final Treatment: $t(40) = 6.84, p<.001$
3. Estimated Baseline to Baseline 2: $t(49) = 5.38, p<.001$

Figure 2

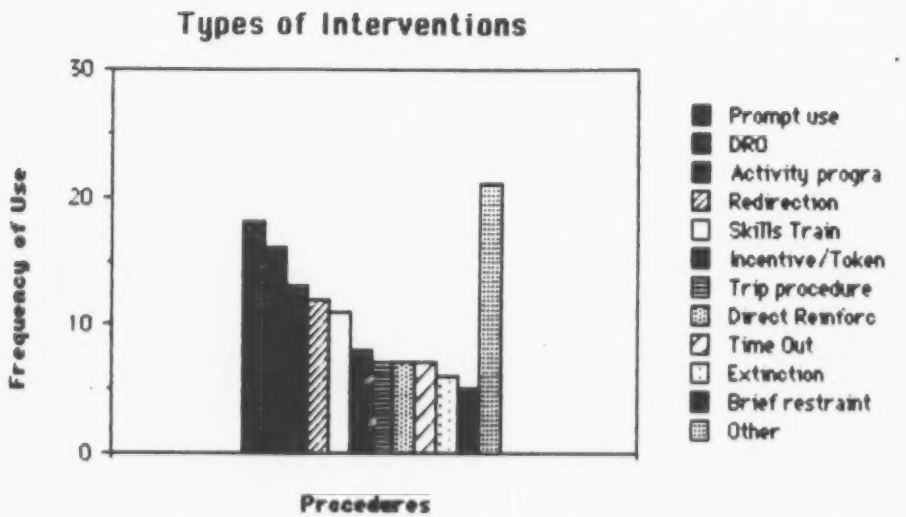

Types of Interventions
30
20
10
0
Frequency of Use
Procedures
Prompt use
DRO
Activity progra
Redirection
Skills Train
Incentive/Token
Trip procedure
Direct Reinforc
Time Out
Extinction
Brief restraint
Other

Figure 3

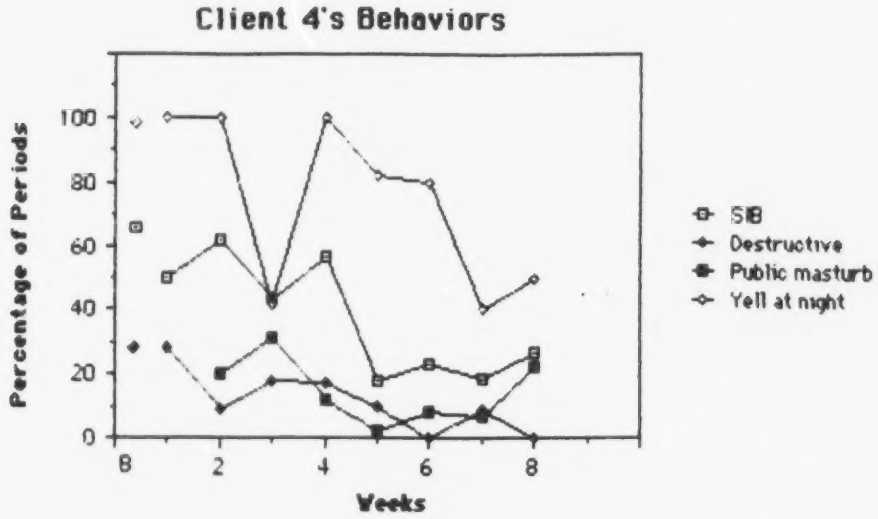
BEHAVIOR RECORD for [CLIENT 16]

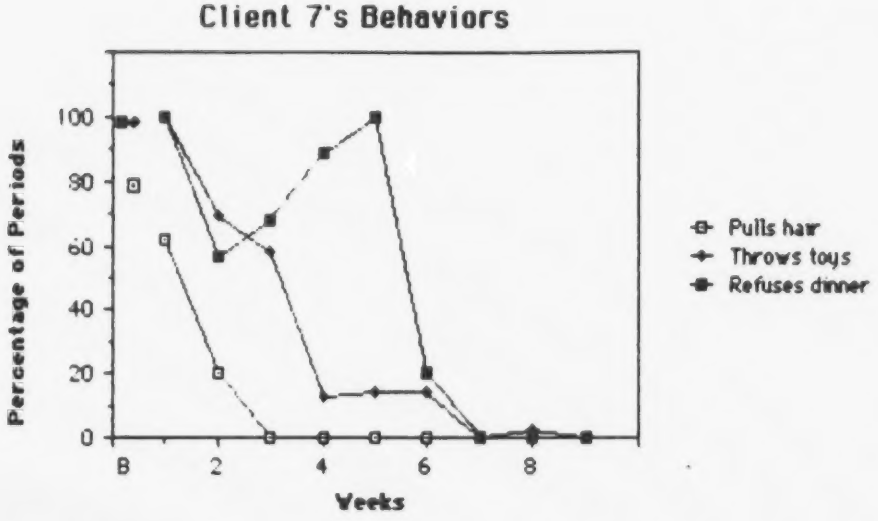
Month: JANUARY 1991

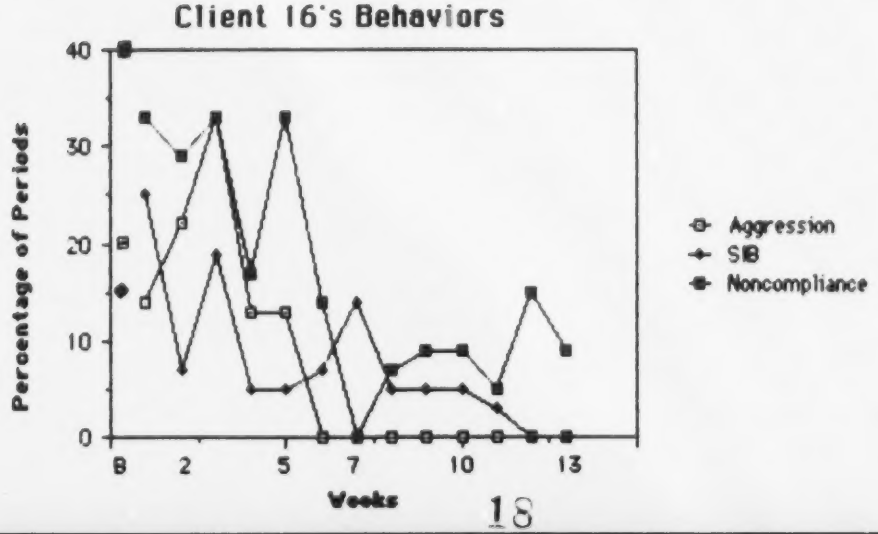
Instructions: Place a check mark in the appropriate box for each behavior which occurs during the listed time period. If that behavior does not occur during the period, put a zero in the box at the end of the period.

Behavior	Time Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
PHYSICAL AGGRESSION (STRIKING OUT, SCRATCHING)	WAKEUP-LUNCH																															
	AFTER LUNCH - DINNER																															
	AFTER DINNER-BEDTIME																															
SELF-INJURIOUS BEHAVIOR (HITS OWN HEAD, BITES SELF)	WAKEUP-LUNCH																															
	AFTER LUNCH - DINNER																															
	AFTER DINNER-BEDTIME																															
NON-COMPLIANCE ONLY AFTER SECOND REQUEST	WAKEUP-LUNCH																															
	AFTER LUNCH-DINNER																															
	AFTER DINNER-BEDTIME																															
16																																

Figure 4


Client 4's Behaviors
Percentage of Periods
100
80
60
40
20
0
B
2
4
6
8
Weeks
SIB
Destructive
Public masturb
Yell at night


Client 7's Behaviors
Percentage of Periods
100
80
60
40
20
0
B
2
4
6
8
Weeks
Pulls hair
Throws toys
Refuses dinner


Client 16's Behaviors
Percentage of Periods
40
30
20
10
0
B
2
5
7
10
13
Weeks
Aggression
SIB
Noncompliance